Amendments to the claims:

1.-17 (canceled)

18.(new) A communication network comprising at least three nodes interconnected by at least two distinct communication links, wherein:

each of said communication links has at least two electrical conductors;

each of said communication links connects two of said nodes and is operative to communicate in a half-duplex mode;

at least one of said nodes is couplable to a payload;

wherein the network has at least one distinct state in which one of said nodes is in a data generating mode in which said one of said nodes transmits data to at least another one of said nodes connected to said one of said nodes by at least one communication link connected thereto and simultaneously at least a further one of said nodes is in a repeating mode in which said further one of said nodes repeats data received via one communication link to all other communication links.

19. (new) The network as in claim 18, wherein said other one of said nodes is in a receiving mode wherein said node receives data in one or more communication links.

20.(new) The network as in claim 18 wherein said nodes are interconnected by said links to cause said network to have a linear topology.

21.(new) The network as in claim 18, wherein said nodes are interconnected by said links to cause said network to have a circular topology.

22.(new) The network as in claim 18, further comprising at least one source of electrical power distributed to said nodes via said communication links.

23.(new) The network as in claim 22, wherein said electrical conductors are operative for distributing both electrical power from said source and the data communication signals.

24.(new) The network as in claim 18, further comprising a network controller for selecting said operational modes of said nodes.

25.(new) The network as in claim 24, wherein said network controller is operative for selecting said modes of said nodes via signals transported by the local area network.

26.(new) The network as in claim 18, wherein at least two of said nodes are sequentially selected to operate in the data generating mode.

27.(new) The network as in claim 18, wherein at least one of said communication links is operative for communicating in a full-duplex mode.

28.(new) The network as in claim 18, wherein at least one of said nodes is connected to two of said communication links and, for repeating data received via one communication link, said at least one of said nodes comprises a repeater connected between said two of said communication links, said repeater being controllable to repeat data in a selected direction between said two of said communication links.

29.(new) A node for distributing data communication, sensing, and control signals in a local area network, the node comprising:

a first line coupler connectable to a first communication link;

a second line coupler connectable to a second communication link;

a power supply having a source of electrical power; and

a control, logic, and processing unit,

wherein said node is mode switchable under control of said control, logic, and processing unit into a first state that allows data to be repeated only in a direction from said first link to said second link, and a second state that allows data to be repeated only from said second link to said first link.

30. (new) The node as in claim 29, further comprising at least one receiver connected to one of said communication links operative to receive data therefrom.

Cont.

31. (new) The node as in claim 29, wherein said node is operative in a mode in which data is transmitted to at least one of said communication links.

32.(new) The node as in claim 29, further comprising at least one payload interface.

33.(new) The node as in claim 33, further comprising a device selected from a group consisting of sensors, actuators, and data terminal equipment connected to said payload interface.